

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-000282**Date Inspected:** 11-Jul-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 800**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Mr. Huang Wei**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** PQR Mechanical Testing**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Robert Cuellar is present at the fabrication facility of Zhenhua Port Machinery Company (ZPMC), LTD for the purpose of monitoring activities relative to the subsequent fabrication of the SFOBB Self Anchored Suspension Bridge. Also present are Caltrans OSM representatives, Mr. Dave McClary, Mr. Bruce Berger, Mr. Ady Velasco and Mr. Alfredo Acuna. Only observations by QA Inspector Robert Cuellar are being recorded within this report as follows,

The Caltrans QA Inspector is present at the ZPMC testing center as requested by ZPMC for the purpose of observing scheduled mechanical testing of specimens for PQRs identified as HP2007143-1 & HP2007370. ABF representative Mr. Jeff Evans and Mr. Huang Wei are also present to witness the mechanical testing for these two PQR tests. The Caltrans QA Inspector observed that ZPMC has prepared reduced section specimens, standard all weld metal tension specimens, side bend specimens, charpy vee notch specimens and also macroetch specimens. Included at the end of this report is a digital picture of these prepared specimens prior to testing.

Mechanical Testing of ZPMC PQR HP2007143-1 90mm Thick A709 Grade 485 Steel Plate**Six (6) Reduced Section Tension Specimens**

Specimen number BBW7143-1-1 was tested and recorded to have an ultimate tensile strength of 653 MPa.

Specimen number BBW7143-1-2 was tested and recorded to have an ultimate tensile strength of 624 MPa.

Specimen number BBW7143-1-16 was tested and recorded to have an ultimate tensile strength of 647 MPa

Specimen number BBW7143-1-22 was tested and recorded to have an ultimate tensile strength of 651 MPa

Specimen number BBW7143-1-23 was tested and recorded to have an ultimate tensile strength of 644 MPa

Specimen number BBW7143-1-24 was tested and recorded to have an ultimate tensile strength of 649 MPa.

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One (1) Round All Weld Metal Tension Specimen

BBW7143-1-3 was tested and recorded to have an ultimate tensile strength of 643MPa and yield strength of 563MPa. The elongation was measured at 30.0%.

Three (3) Groove Weld Macroetch Specimens

Specimen numbers BBW7143-13, BBW7143-1-14 and BBW7143-1-15 have been observed and recorded as having no defects and thorough fusion to the steel backing bar and between adjacent layers of weld metal and base metal.

Five Charpy Vee Notch Test Specimens

Specimen numbers BBW7143-1-4, BBW7143-1-5, BBW7143-1-6, BBW7143-1-7 and BBW7143-1-8 have been tested at -30 degrees Celsius and were observed and recorded as having impact energy values of 71 Joules, 114 Joules, 98 Joules, 95 Joules and 116 Joules.

Five Charpy Vee Notch Test Specimens-Heat Affected Zone (HAZ)

Specimen numbers BBW7143-1-17, BBW7143-1-18, BBW7143-1-19, BBW7143-1-20 and BBW7143-1-21 have been tested at -18 degrees Celsius and were observed and recorded as having impact energy values of 95 Joules, greater than 150 Joules, greater than 150 Joules, greater than 150 Joules and greater than 150 Joules.

Four (4) Side Bend Test Specimens

Specimen numbers BBW7143-1-9, BBW7143-1-10, BBW7143-1-11 and BBW7143-1-12 have been observed and recorded as having no convex surface defects.

The tests results identified above have been observed and recorded as being compliant with the test requirements as listed within AWS D1.5 (2002) table 4.1 for A709 Grade 485W material with a E9018M MR electrode and also the requirements listed within the Special Provisions. The Caltrans QA Inspector has identified that the number of charpy vee notch specimens and the round all weld metal tension specimens tested does not comply with the number of specimens required by the AASHTO Standard Specification for Highway Bridges.

Mechanical Testing of ZPMC PQR HP2007370 26mm Thick A709 Grade 345 Steel Plate

Two (2) Reduced Section Tension Specimens

Specimen number BBW7370-1 was tested and recorded to have an ultimate tensile strength of 561 MPa. Specimen number BBW7370-2 was tested and recorded to have an ultimate tensile strength of 558 MPa.

One (1) Round All Weld Metal Tension Specimen

BBW7370-3 was tested and recorded to have an ultimate tensile strength of 610MPa and yield strength of 523MPa. The elongation was measured at 22.8%.

Three (3) Groove Weld Macroetch Specimens

Specimen numbers BBW7370-13, BBW7370-14 and BBW7370-15 have been observed and recorded as having no defects and thorough fusion to the steel backing bar and between adjacent layers of weld metal and base metal.

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Five Charpy Vee Notch Test Specimens

Specimen numbers BBW7370-4, BBW7370-5, BBW7370-6, BBW7370-7 and BBW7370-8 have been tested at -30 degrees Celsius and were observed and recorded as having impact energy values of 147 Joules, greater than 150 Joules, greater than 150 Joules, greater than 150 Joules and greater than 150 Joules.

Four (4) Side Bend Test Specimens

Specimen numbers BBW7370-9, BBW7370-10, BBW7370-11 and BBW7370-12 have been observed and recorded as having no convex surface defects.

The test results identified above have been observed and recorded as being compliant with the test requirements as listed within AWS D1.5 (2002) table 4.2 for A709 Grade 345 material with a Chinese electrode JM-56 (ER70S-6).

This Caltrans 6031 report is supported by two additional Caltrans 6032 reports for this date.



Summary of Conversations:

ABF representative Mr. Jeff Evans informed Mr. David McClary and the Caltrans QA Inspector that ZPMC is wanting to blast and primer coat the steel plates scheduled for use on the Caltrans 77 meter mock-up. Mr. Dave McClary questioned if ZPMC has documentation that reflects the type of primer coating that will be used for the primer coating scheduled for use. Mr. Jeff Evans voiced that he would provide Caltrans with this information when it is provided by ZPMC.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Cuellar,Robert	Quality Assurance Inspector
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Reviewed By:	McClary,David	QA Reviewer
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